EXPLANATION OF PLATE IX.

Fig. 1. *Lütkenia arctica*, from above. Natural size.
Fig. 2. *Lütkenia arctica*, from below. Natural size.
Fig. 3. Mouth-shield, side mouth-shields, jaw-angles, and mouth-papillæ and tooth-papillæ. Magnified 2 diameters.
Fig. 4. Tooth-papillæ, from below and obliquely. Magnified 2 diam.
Fig. 4 *a*. Representatives of the teeth, from above. Magnified 2 diam.
Fig. 5. Lower arm-plates and side arm-plates. Magnified 2 diam.
Fig. 6. Side arm-plates and spines. Magnified 2 diam.
Fig. 7. Upper arm-plates. Magnified 2 diam.

BIBLIOGRAPHICAL NOTICE.

A Manual of Zoology for the Use of Students, with a General Introduction on the Principles of Zoology. By Henry Alleyne Nicholson, M.D., D.Sc., M.A., Ph.D., F.R.S.E., F.G.S. Fifth Edition, revised and enlarged. 8vo. Blackwoods; Edinburgh and London, 1878.

We welcome the appearance of this new edition of Prof. Nicholson's 'Manual of Zoology,' of some previous issues of which we have had occasion to speak in terms of praise. As a general systematic treatise on the structure and classification of animals it is the best that we possess; and the author's industry has enabled him in the present edition, which is much enlarged, to improve his work very greatly. Still the work is rather a manual of animal morphology for the use of students than a treatise on zoology in the broad sense of the term; but we must be thankful for what we get, and it must be confessed that it would be impossible, even within the limits of the present enlarged volume, to combine an equally satisfactory account of the organization, development, and structure of animals with a good sketch of their relations to each other and to the outer world. In this latter particular we are nevertheless glad to see that Prof. Nicholson has now gone further than in previous editions. The increase in the number of pages is considerable; but besides this the author has further gained space by printing certain portions of his work in small type.

In its general arrangement this edition differs so little from its predecessors as not to require any detailed notice. On nearly every page, however, we find traces of alterations made in consequence of recent researches in different branches of zoology: the chapters on Sponges and Hydroids and on Entozoa seem to have received great additions; and the results of the recent investigations of the American palæontologists upon the rich accumulations of vertebrate remains found in their Secondary and Tertiary rocks have led to considerable additions being made to the chapters on Vertebrata. We notice that that most unnatural group, the Annuloida, still figures as a primary division of the animal kingdom; let us hope that it will disappear from the next edition, as its founder may be considered to have already given it up.

In his preface and elsewhere Prof. Nicholson objects to the modern school of embryological systematists, and, we think, with reason. That embryological facts may frequently serve as guides in classification, nay, that a classification which is in contradiction to a broad embryology should be regarded with distrust, we are quite ready to admit; but we must know much more about the embryogeny of animals before we can accept the views of those who hold that their interpretation of the earliest stages of development is to override all indications derived from the study of the adult animals.

This edition contains a considerable number of new illustrations, which will materially increase its usefulness as a student's manual. An entirely new feature is the introduction of Bibliographical lists indicating the principal works of reference to be consulted in search of further information upon the different classes of animals. These lists might easily be improved both by additions and omissions; but as they are they will be found very serviceable.

MISCELLANEOUS.

On a new Opisthocœlous Dinosaur. By Dr. E. D. Cope.

I have recently received from the Dakota beds of Canyon city, Colorado, a number of bones of a new and remarkable extinct reptile allied to *Camarasaurus* (=*Titanosaurus* and *Atlantosaurus*, Marsh) and *Streptospondylus*. The dorsal vertebræ are strongly opisthocœlous, and are without lateral fossa or foramen of the centrum. The arch is freely articulated with the latter, and is not much elevated, and possesses no hyposphen. The neural spine is transverse; the diapophysis is supported on narrow buttresses, and the neural arches generally lightened by fossæ as in the two genera named. A strong parapophysial tubercle near the anterior convexity receives the head of the rib. Each zygapophysis of one side is separated from that of the other by a deep concavity. The genus so characterized may be called *Epanterias*, and the species *E. amplexus*. The latter has a rather low and wide dorsal neural arch with small fore and aft diameter, and with a neural spine divided into three obtuse apices. There are three fossæ at the base of the diapophyses, the anterior one vertical, and a very deep one between the posterior zygapophyses. The cup of the centrum embraces the ball extensively; and the neurapophysis overlaps the side of the centrum behind. Length of centrum ·115 m.; diameters behind, transverse ·120, vertical ·108. Elevation of neural arch ·290; width of neural spine ·083, of both diapophyses ·400. This saurian was much smaller than the *Camarasaurus supremus*, and, perhaps, equal to the *Hadrosaurus Foulkei*. It may be associated with the former in the *Camarasauridæ*. With *Amphicœlias* is probably in like manner to be arranged *Tichosteus*; while the carnivorous form *Hypsirhophus* represents a third type.—*American Naturalist* for June 1878.